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MONTANA PRAIRIE RIPARIAN NATIVE SPECIES STUDY



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*Abstract.*—Information on the distribution and abundance of fish, amphibians, reptiles, birds, and small mammals in and around Montana prairie streams is scarce. This information is important for resource managers to better understand and manage prairie species and their habitats. During the 2002 field season, we sampled fish, amphibians, reptiles, birds, and small mammals at 35 sites within prairie ecoregions in Montana. Five of these sites were sampled twice to allow an estimate of temporal variability in biological assemblages.

## Introduction

An analysis of Montana Fish, Wildlife and Park's Montana River Information System database indicated that more than 18,000 miles of streams in the Montana database have not been surveyed. The overwhelming majority of these waters are small, warmwater prairie streams located in eastern Montana. Many of these streams likely contain intact, diverse assemblages of native non-game fish. Similarly, data is scarce or non-existent for amphibians, reptiles, birds, and small mammals in the riparian and upland areas adjacent to these prairie streams. The purpose of this study is to gain a greater understanding of the vertebrate fauna that occurs in prairie streams and associated habitats by performing a survey of fish, amphibians, reptiles, birds, and mammals. This information will enable resource managers to better understand and manage prairie ecosystems.

## Study Area and Methods

We sampled 35 sites in the Northern Great Plains and Northern Glaciated Plains Ecoregions in the eastern two thirds of Montana, which include portions of the Missouri, Yellowstone, and Little Missouri river basins.

The sampling effort consisted of two phases:

1. Phase 1 (Bird surveys)—Birds were surveyed from late May through June, during the season when males are actively singing on their territories.
2. Phase 2 (Fish, reptile, amphibian, and small mammal surveys)—These taxa were surveyed during June through September at the same sites sampled during Phase 1.

To assess temporal variability in species assemblages a subset of five sites were sampled a four times. Five of the sites sampled early in Phase 1 were resampled towards the end of Phase 1 sampling. These same five sites were then sampled for the other taxa early and late in Phase 2 sampling. Quantification of within-site temporal variability will allow comparison to between-site variability to ascertain the extent to which differences among sites are caused by time of sampling.

*Reptiles and amphibians.*—Visual encounter surveys (VES) were used to determine the relative abundances of amphibians and reptiles (Heyer et al. 1994). Two 300-m VES transects were surveyed along the stream banks (2 banks x 300 m), and three 140-m transects were surveyed perpendicular to the stream along the mammal traplines. We recorded incidental observations of reptiles and amphibians during all other site activities, including vocalizations of frogs and toads heard while camping near sampling sites.

*Fish.*—Fish were surveyed at each site by seining a 300-m reach of stream. All fish captured were identified to species, and lengths of at least 20 randomly selected individuals were recorded for each species. Up to ten voucher specimens for each species were preserved.

*Birds.*—Three point-counts were conducted at each site using standard point-count protocols (Ralph et al. 1995); one point-count was conducted at the center of the fish survey reach and the others were located 300 m straight-line-distance upstream and downstream from the center point within the riparian zone. Bird surveys were conducted between May 24 and June 30, 2002. Each point-count was conducted for 10 minutes, and all birds detected visually or aurally were recorded. General vegetation condition and structure were recorded at each point-count site. These measurements were modified from protocols established for forested areas (Hutto et al. 2001). Point-count protocols were consistent with state-wide bird monitoring protocols under development as part of the Montana Bird Conservation Plan to enable incorporation of our data into the state-wide database.

*Mammals.*—Three, 140-meter line transects were established perpendicular to the stream, centered on each bird point count site, and running perpendicular to the stream channel. Paired

snap-traps and Sherman live traps baited with peanut butter and oats were set along this transect, evenly spaced at every ten meters along each transect (16 sets/transect x 2 traps/set x 3 transects = 96 traps/site). Traps were set in the late afternoon or evening, and checked the following morning.

*Aquatic and riparian habitat.*—We surveyed habitat in the same location as the fish sampling following the U. S. Environmental Protection Agency protocol for physical habitat characterization (Kaufmann and Robison 1998), which includes measures of channel dimensions, channel gradient, substrate size and type, habitat complexity and cover, riparian vegetation cover and structure, anthropogenic alterations, and channel-riparian interaction.

*Water chemistry.*—Water conductivity (micromhos/cm), dissolved oxygen (mg/L), pH, salinity (ppt), turbidity (NTU), water and air temperature (°C), and time of sample were recorded at each site.

## Results

*Fishes.*—We sampled 34 sites for fishes, including 5 sites sampled twice to assess temporal variability in fish assemblages. The 35<sup>th</sup> site, Trail Creek was not sampled, because we were unable to access the site due to rain. Of the 34 sites, 27 (77%) had fishes present. A total of 12,656 individual fishes of twenty-four fish species were captured (Table 1). Seventeen species and 10,433 individual fishes were native to Montana, and the remaining seven species and 2,222 individual fishes were introduced species. Fish collection records and latitude and longitude of sample locations have been forwarded to Steve Carson for incorporation into the MFISH database.

Fathead minnow were the most numerous, comprising 59% of the total catch. Common carp and black bullhead comprised 7% and 6% of the catch, respectively. Plains minnow, brassy minnow, green sunfish, sand shiner, lake chub, white sucker, *Phoxinus* sp., longnose dace, creek chub, brook stickleback, and pearl dace each comprised from 1 to 5% of the catch. Flathead chub,

northern pike, yellow perch, plains killifish, channel catfish, largemouth bass, Iowa darter, western silvery minnow, stonecat, and river carpsucker comprised less than 1% of the catch.

*Amphibians and reptiles.*—We sampled all 35 sites for amphibians and reptiles. A total of six amphibian species, (Great Plains Toad, Northern Leopard Frog, Tiger Salamander, Woodhouse's Toad, Western Chorus Frog, and Plains Spadefoot) and nine reptile species (Gopher Snake, Painted Turtle, Plains Garter Snake, Racer, Sagebrush Lizard, Short-horned Lizard, Snapping Turtle, Western Rattlesnake, Western Terrestrial Garter Snake) were observed (Table 1).

*Birds.*—We sampled all 35 sites for birds, including 5 sites sampled twice to assess temporal variability in bird assemblages. A total of 2,761 individual birds of 90 species were observed during point count surveys (Table 1). The most abundant species observed were Cliff Swallows; however this was attributable to the observation of a colony of 200-300 individuals at one site. The next three most abundant species were Western Meadowlark, Lark Bunting, and Red-winged Blackbird. We observed an additional 29 bird species through incidental observations at the sampling sites.

*Mammals.*—We sampled all 35 sites for small mammals, including 5 sites sampled twice to assess temporal variability in small mammal assemblages. A total of 384 individual mammals of 8 species were captured (Table 2). The most abundant species observed was the deer mouse. The other species captured in descending order of abundance were white-footed mouse, meadow vole, northern grasshopper mouse, *Peromyscus* sp., western harvest mouse, olive-backed pocket mouse, Richardson's ground squirrel, and house mouse. As indicated by Foresman (2001), deer mice and white-footed mice were difficult to distinguish in the field. Incidental animals captured in mammal traps were a northern leopard frog, an upland sandpiper, and a horned lark.

#### Plans for 2003

We plan to have another full field season in 2003, when we will obtain a set of 40 samples. In April, Bob Bramblett will conduct a prairie fish identification workshop at Montana State University-Bozeman and a field sampling methods workshop at Armells Creek near the Fred

Robinson Bridge area on the Charles M. Russell National Wildlife Refuge. These workshops are being held to assist with training MFWP regional fish sampling crews.

## References

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Table 1. Summary of observations of fish, amphibian, reptiles, and birds, 2002.

Site	Fish Species Captured	Number of Fish Captured	Reptile and Amphibian Species Observed	Number	Bird Species	Number Observed
Assiniboine Creek	7/13/2002		Incidentals		5/31/2002 Incidentals	
	brassy minnow	17	Northern Leopard Frog		American Coot	
	brook stickleback	1	Painted Turtle		American Goldfinch	
	fathead minnow	199	Survey 1		American Green-winged Teal	
	lake chub	15	Northern Leopard Frog	4	American Wigeon	
	<i>Phoxinus</i> sp.	122	Survey 2		Barn Swallow	
	white sucker	33	Northern Leopard Frog	4	Black-billed Magpie	
	9/28/2002		Painted Turtle	1	Black-crowned Night-Heron	
	brassy minnow	26	Plains Garter Snake	1	Blue-winged Teal	
	brook stickleback	1	Unknown Frog	2	Brown Thrasher	
	fathead minnow	271	Western Terrestrial Garter Snake	1	Brown-headed Cowbird	
	pearl dace	19			California Gull	
	<i>Phoxinus</i> sp.	37			Common Grackle	
	white sucker	28			Common Yellowthroat	
					Eastern Kingbird	
					Ferruginous Hawk	
					Killdeer	
					Least Sandpiper	
					Loggerhead Shrike	
					Long-billed Curlew	
					Marbled Godwit	
					Mourning Dove	
					Northern Harrier	
					Red-winged Blackbird	
					Ring-necked Pheasant	
					Sora	
					Upland Sandpiper	
					Western Meadowlark	
					Willet	
					Wilson's Phalarope	
					Yellow Warbler	
					Yellow-rumped Warbler	



<u>5/31/2002 Survey</u>	
American Robin	3
American Wigeon	3
Black-billed Magpie	1
Brown-headed Cowbird	5
Common Grackle	2
Common Snipe	1
Common Yellowthroat	1
Eastern Kingbird	4
Horned Lark	2
Killdeer	3
Loggerhead Shrike	2
Mallard	3
Marbled Godwit	6
Mourning Dove	3
Red-winged Blackbird	4
Ring-necked Pheasant	1
Western Meadowlark	5
Willet	3
Wilson's Phalarope	5
<u>6/26/2002 Incidentals</u>	
American Goldfinch	
Barn Swallow	
Black-billed Magpie	
Black-crowned Night-Heron	
Sora	
Wilson's Phalarope	
<u>6/26/2002 Survey</u>	
American Robin	1
American Wigeon	1
Blue-winged Teal	1
Brown-headed Cowbird	8
Common Grackle	2
Double-crested Cormorant	1
Eastern Kingbird	2
European Starling	4

Horned Lark	1
Killdeer	7
Lark Bunting	1
Loggerhead Shrike	2
Mallard	2
Marbled Godwit	4
Mourning Dove	4
Red-winged Blackbird	9
Ring-necked Pheasant	2
Western Meadowlark	9
Willet	1
Yellow-headed Blackbird	2

Big Dry Creek

9/4/2002

black bullhead	146
common carp	90
fathead minnow	60
lake chub	1
plains killifish	1
plains minnow	9
sand shiner	1
yellow perch	4

Incidentals

Northern Leopard Frog
Painted Turtle
Snapping Turtle
Woodhouse's Toad

Survey

Northern Leopard Frog
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5/27/2002 Incidentals

American Kestrel
Killdeer
Upland Sandpiper

5/27/2002 Survey

American Goldfinch	2
American Kestrel	1
American Wigeon	1
Brown Thrasher	1
Canada Goose	2
Cliff Swallow	7
Eastern Kingbird	1
Horned Lark	1
Killdeer	1
Lark Bunting	8
Lark Sparrow	3
Mallard	2
Mourning Dove	2
Northern Flicker	1
Red-winged Blackbird	8
Rock Wren	2
Unknown Woodpecker	1
Upland Sandpiper	2

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			Western Meadowlark	8
Bitter Creek	<u>9/17/2002</u>	<u>Incidentals</u>	<u>6/22/2002 Incidentals</u>	
	brassy minnow	36	Cliff Swallow	
	creek chub	44	Common Poorwill	
	fathead minnow	40	Spotted Towhee	
	plains killifish	1	White-throated Swift	
	sand shiner	55	<u>6/22/2002 Survey</u>	
	white sucker	4	American Robin	1
			Brown-headed Cowbird	1
			Bullock's Oriole	2
			Cassin's Kingbird	3
Blood Creek	<u>9/1/2002</u>	<u>Incidentals</u>	Chipping Sparrow	2
	no fish		Common Grackle	4
		<u>Survey</u>	Common Nighthawk	1
		Bufo toadlet	Eastern Kingbird	2
		Bufo toadlet	European Starling	6
		Great Plains Toadlet	House Wren	5
		Woodhouse's Toadlet	Lark Sparrow	3
			Mourning Dove	4
			Northern Flicker	3
			Unknown Woodpecker	2
			Western Kingbird	9
			Western Meadowlark	6
			Western Wood-Pewee	2
			Yellow Warbler	7
			<u>5/29/2002 Incidentals</u>	
			American Kestrel	
			Brown-headed Cowbird	
			Bullock's Oriole	
			Chipping Sparrow	
			Common Poorwill	
			House Wren	
			Lark Sparrow	
			Lazuli Bunting	

Mountain Bluebird  
 Northern Flicker  
 Red-breasted Nuthatch  
 Rock Wren  
 Say's Phoebe  
 Spotted Towhee  
 Violet-green Swallow  
 Western Kingbird  
 Yellow-rumped Warbler

5/29/2002 Survey

Bullock's Oriole	1
Canada Goose	2
Chipping Sparrow	1
Eastern Kingbird	1
Lark Bunting	18
Lark Sparrow	8
Mourning Dove	1
Say's Phoebe	3
Vesper Sparrow	2
Western Kingbird	7
Western Meadowlark	10
Yellow Warbler	1

Boxelder Creek

7/23/2002

black bullhead	20
northern pike	2
white sucker	2

Incidentals

Northern Leopard Frog

6/19/2002 Survey

Blue-winged Teal	3
Brewer's Blackbird	4
Brown Thrasher	1
Brown-headed Cowbird	12
Clay-colored Sparrow	4
Common Grackle	1
Common Yellowthroat	3
Eastern Kingbird	3
Killdeer	3
Lark Bunting	4
Mallard	3
Mourning Dove	4

Northern Harrier	1
Northern Rough-winged Swallow	1
Red-winged Blackbird	6
Ring-necked Pheasant	3
Song Sparrow	3
Upland Sandpiper	3
Western Meadowlark	5
Willet	1
Yellow Warbler	2

Buggy Creek

7/18/2002

fathead minnow	7
lake chub	1

Survey

Painted Turtle	1
Racer	1

6/10/2002 Incidentals

American Kestrel
Baltimore Oriole
Blue-winged Teal
Double-crested Cormorant
Eastern Kingbird
Field Sparrow
Hairy Woodpecker
Lark Sparrow
Loggerhead Shrike
Sprague's Pipit
Unknown Empidonax
Western Kingbird

6/10/2002 Survey

American Robin	2
Black-capped Chickadee	2
Brown-headed Cowbird	3
Bullock's Oriole	1
Common Grackle	1
European Starling	5
House Wren	7
Killdeer	2
Long-billed Curlew	1
Mallard	1
Mourning Dove	1
Northern Flicker	4

				Ovenbird	1
				Ring-necked Pheasant	2
				Song Sparrow	1
				Warbling Vireo	1
				Western Meadowlark	6
				Yellow Warbler	11
Chouteau Coulee	<u>8/6/2002</u>		<u>Survey</u>	<u>6/9/2002 Incidentals</u>	
	no fish		none	American Robin	
				Common Grackle	
				Mallard	
				Marbled Godwit	
				Mourning Dove	
				Ring-necked Pheasant	
				Rock Wren	
				Unknown Empidonax	
				Vesper Sparrow	
				Willet	
				Yellow Warbler	
				<u>6/9/2002 Survey</u>	
				Brewer's Blackbird	1
				Brown Thrasher	1
				Brown-headed Cowbird	3
				Common Merganser	4
				European Starling	4
				Horned Lark	1
				Killdeer	1
				Lark Sparrow	1
				Western Meadowlark	9
Cottonwood Creek	<u>8/1/2002</u>		<u>Incidentals</u>	<u>6/6/2002 Incidentals</u>	
	common carp	367	Short-horned Lizard	Eastern Kingbird	
			Western Rattlesnake	Gray Partridge	
			<u>Survey</u>	Lark Sparrow	
			none	Violet-green Swallow	
				<u>6/6/2002 Survey</u>	

Crow Creek (1)

7/18/2002

black bullhead	3
fathead minnow	113
lake chub	23
plains minnow	1
white sucker	4

Incidentals

Northern Leopard Frog
Plains Garter Snake
Western Chorus Frog
Survey
none

American Robin	1
Black-billed Magpie	3
Brown Thrasher	1
Brown-headed Cowbird	14
Clay-colored Sparrow	1
Horned Lark	2
House Sparrow	1
Mallard	1
Mountain Bluebird	1
Mourning Dove	5
Northern Harrier	1
Unknown Sparrow	1
Unknown Swallow	1
Violet-green Swallow	1
Western Kingbird	3
Western Meadowlark	5

5/31/2002 Incidentals

Blue-winged Teal
Brown Thrasher
Gray Partridge
House Wren
Lesser Scaup
Loggerhead Shrike
Mallard
Sharp-tailed Grouse
Swainson's Hawk
Vesper Sparrow
Willet

5/31/2002 Survey

American Goldfinch	1
Barn Swallow	1
Brewer's Blackbird	8
Brown Thrasher	1
Brown-headed Cowbird	3
Eastern Kingbird	2

Horned Lark	1
Killdeer	1
Lark Bunting	1
Lesser Scaup	3
Loggerhead Shrike	2
Mourning Dove	10
Red-winged Blackbird	2
Unknown Blackbird	3
Unknown Duck	2
Western Meadowlark	8
<hr/> 6/24/2002 Incidentals	
Barn Swallow	
Brewer's Blackbird	
Common Nighthawk	
Killdeer	
Sprague's Pipit	
Willet	
<hr/> 6/24/2002 Survey	
American Kestrel	1
Black-billed Magpie	1
Brewer's Blackbird	2
Brown Thrasher	3
Brown-headed Cowbird	17
Common Nighthawk	2
Eastern Kingbird	5
Horned Lark	3
Lark Bunting	8
Loggerhead Shrike	2
Mallard	2
Mourning Dove	6
Red-winged Blackbird	2
Unknown Duck	3
Unknown Sparrow	1
Western Meadowlark	11



Crow Creek (2)	<u>9/15/2002</u>	<u>Survey</u>		<u>6/21/2002 Incidentals</u>
	brassy minnow 42	Northern Leopard Frog	4	Blue-winged Teal
	common carp 15			Brewer's Blackbird
	creek chub 1			Brown Thrasher
	fathead minnow 62			Bullock's Oriole
	green sunfish 445			Common Grackle
	plains minnow 2			Common Nighthawk
	river carpsucker 1			Golden Eagle
	sand shiner 181			Great Blue Heron
				Red-headed Woodpecker
				Red-tailed Hawk
				Western Kingbird
				<u>6/21/2002 Survey</u>
				American Kestrel 2
				Brown-headed Cowbird 2
				Cliff Swallow 55
				Eastern Kingbird 2
				Field Sparrow 4
				Horned Lark 1
				Killdeer 1
				Lark Bunting 6
				Loggerhead Shrike 1
				Mourning Dove 1
				Northern Flicker 1
				Red-winged Blackbird 8
				Upland Sandpiper 2
				Western Meadowlark 7
Currant Creek	<u>8/28/2002</u>	<u>Incidentals</u>		<u>6/24/2002 Incidentals</u>
	no fish	Great Plains Toad		Black-capped Chickadee
		Plains Spadefoot		Brown-headed Cowbird
		Sagebrush Lizard		Chipping Sparrow
		Western Chorus Frog		Common Nighthawk
		Woodhouse's Toad		Dusky Flycatcher
		<u>Survey</u>		Lark Sparrow
		Bufo toadlet	2	Mountain Bluebird

Great Plains Toadlet	2	Red Crossbill	
Western Chorus Frog	29	Red-tailed Hawk	
		Sandhill Crane	
		Turkey Vulture	
		White-breasted Nuthatch	
		<u>6/24/2002 Survey</u>	
		American Goldfinch	1
		American Robin	4
		Blue-winged Teal	2
		Brewer's Blackbird	9
		Bullock's Oriole	1
		Cliff Swallow	1
		Eastern Kingbird	2
		European Starling	4
		Killdeer	4
		Mallard	2
		Marbled Godwit	1
		Mourning Dove	4
		Northern Flicker	1
		Red-winged Blackbird	6
		Spotted Sandpiper	1
		Unknown Duck	1
		Upland Sandpiper	4
		Vesper Sparrow	4
		Western Meadowlark	12
		Western Wood-Pewee	2
		Yellow-headed Blackbird	1

Dog Creek	<u>7/12/2002</u>	<u>Survey 1</u>	<u>5/29/2002 Incidentals</u>
	brassy minnow	Bufo tadpole	American Goldfinch
	brook stickleback	Northern Leopard Frog	23
	common carp	Western Chorus Frog	5
	fathead minnow	Woodhouse's Toad	2
	lake chub	<u>Survey 2</u>	1
	longnose dace	Western Rattlesnake	
	plains minnow	Northern Leopard Frog	1
			<u>5/29/2002 Survey</u>

<u>9/30/2002</u>	
fathead minnow	74
lake chub	44
plains minnow	18

8	American Kestrel	4
	American Robin	3
	Black-billed Magpie	5
	Black-capped Chickadee	2
	Canada Goose	2
	Cliff Swallow	11
	Killdeer	2
	Mourning Dove	4
	Northern Flicker	1
	Red-winged Blackbird	1
	Rock Dove	3
	Rock Wren	1
	Unknown Blackbird	1
	Violet-green Swallow	8
	Western Meadowlark	3
	<u>6/26/2002 Incidentals</u>	
	Chipping Sparrow	
	Common Nighthawk	
	Common Poorwill	
	Golden Eagle	
	Great Horned Owl	
	House Wren	
	Lark Sparrow	
	Pinyon Jay	
	Spotted Towhee	
	Vesper Sparrow	
	<u>6/26/2002 Survey</u>	
	American Robin	2
	Black-billed Magpie	8
	Golden Eagle	4
	Mourning Dove	2
	Northern Flicker	3
	Pinyon Jay	3
	Rock Dove	2
	Rock Wren	4
	Spotted Towhee	2

				Western Meadowlark	2
				White-throated Swift	2
Eagle Creek (1)	<u>7/21/2002</u>		<u>Incidentals</u>	<u>6/19/2002 Incidentals</u>	
	brassy minnow	17	Northern Leopard Frog	Long-billed Curlew	
	brook stickleback	23	Painted Turtle	Sora	
	fathead minnow	172	Plains Garter Snake	Sprague's Pipit	
	Iowa darter	2	<u>Survey</u>	Willet	
	pearl dace	61	Painted Turtle	Yellow-headed Blackbird	
	white sucker	84		<u>6/19/2002 Survey</u>	
				Baird's Sparrow	1
				Barn Swallow	1
				Bobolink	1
				Brown-headed Cowbird	7
				Cliff Swallow	9
				Common Snipe	3
				Horned Lark	2
				Lark Bunting	5
				Marbled Godwit	1
				Northern Flicker	1
				Northern Shoveler	2
				Red-winged Blackbird	11
				Savannah Sparrow	3
				Unknown Blackbird	1
				Unknown Swallow	3
				Upland Sandpiper	1
				Western Meadowlark	5
				Wilson's Phalarope	4
Eagle Creek (2)	<u>8/2/2002</u>		<u>Survey</u>	<u>6/7/2002 Incidentals</u>	
	fathead minnow	78	none	American Wigeon	
				Gadwall	
				Golden Eagle	
				Mallard	
				Merlin	
				Northern Pintail	

			<u>6/7/2002 Survey</u>	
			Barn Swallow	1
			Brown-headed Cowbird	5
			Clay-colored Sparrow	2
			Eastern Kingbird	1
			Horned Lark	10
			Long-billed Curlew	2
			Mallard	2
			Mourning Dove	2
			Northern Harrier	2
			Red-winged Blackbird	1
			Unknown Blackbird	1
			Unknown Gull	1
			Vesper Sparrow	2
			Western Meadowlark	1
			Willet	1
East Fork Little Powder	<u>9/16/2002</u>	<u>Survey</u>	<u>6/21/2002 Incidentals</u>	
	black bullhead	7	Great Blue Heron	
	creek chub	68	Northern Flicker	
	fathead minnow	62	<u>6/21/2002 Survey</u>	
	longnose dace	68	American Kestrel	3
	sand shiner	10	Eastern Kingbird	2
	stonecat	3	European Starling	3
	white sucker	4	Great Blue Heron	3
			Mallard	3
			Mourning Dove	2
			Red-winged Blackbird	7
			Unknown Blackbird	1
			Upland Sandpiper	9
			Western Kingbird	3
			Western Meadowlark	12
Elk Creek	<u>8/31/2002</u>	<u>Incidentals</u>	<u>5/25/2002 Incidentals</u>	
	common carp	2	American Kestrel	
			American Redstart	

		Short-horned Lizard		Blackpoll Warbler	
		<u>Survey</u>		Cooper's Hawk	
		Western Chorus Frog	1	Golden Eagle	
				Great Horned Owl	
				Long-billed Curlew	
				Swainson's Hawk	
				Tennessee Warbler	
				Unknown Gull	
				Warbling Vireo	
				Willet	
				<u>5/25/2002 Survey</u>	
				Barn Swallow	1
				Brown-headed Cowbird	6
				Bullock's Oriole	3
				Eastern Kingbird	4
				Killdeer	1
				Lark Bunting	16
				Loggerhead Shrike	1
				Mourning Dove	8
				Ring-necked Pheasant	1
				Swainson's Hawk	2
				Unknown Blackbird	1
				Unknown Swallow	1
				Vesper Sparrow	4
				Western Meadowlark	9
				Yellow Warbler	1
Flat Creek	<u>9/1/2002</u>		<u>Incidentals</u>	<u>5/30/2002 Incidentals</u>	
	black bullhead	287	Painted Turtle	American Robin	
	common carp	7	<u>Survey</u>	American Wigeon	
	fathead minnow	20	Northern Leopard Frog	Blue-winged Teal	
	lake chub	10	Unknown Frog	1	Brewer's Blackbird
				1	Cliff Swallow
					Eastern Kingbird
					Gray Catbird
					Marbled Godwit

				Unknown Gull	
				Upland Sandpiper	
				Willet	
				<u>5/30/2002 Survey</u>	
				Canada Goose	4
				Common Yellowthroat	1
				Great Blue Heron	2
				Horned Lark	4
				Killdeer	2
				Lark Bunting	8
				Mallard	2
				Mourning Dove	5
				Northern Pintail	3
				Ring-necked Pheasant	2
				Spotted Sandpiper	2
				Unknown Blackbird	5
				Unknown Gull	3
				Western Meadowlark	5
				Yellow Warbler	1
Fly Creek	<u>9/5/2002</u>		<u>Incidentals</u>	<u>6/23/2002 Incidentals</u>	
	common carp	4	Painted Turtle	Baltimore Oriole	
			Unknown Turtle	Great Blue Heron	
			<u>Survey</u>	<u>6/23/2002 Survey</u>	
			Painted Turtle	American Kestrel	2
				American Robin	3
				Baltimore Oriole	1
				Bullock's Oriole	2
				Eastern Kingbird	2
				European Starling	31
				Great Horned Owl	1
				Horned Lark	1
				House Wren	4
				Killdeer	1
				Lark Sparrow	4
				Mourning Dove	6

Ford's Creek				Red-tailed Hawk	5
				Red-winged Blackbird	2
				Ring-necked Pheasant	2
				Tree Swallow	2
				Western Kingbird	1
				Western Meadowlark	3
				Yellow Warbler	2



Golden Eagle	1
Gray Catbird	3
Killdeer	2
Lark Bunting	3
Long-billed Curlew	3
Marbled Godwit	5
Red-winged Blackbird	2
Ring-necked Pheasant	2
Upland Sandpiper	2
Western Meadowlark	5
Yellow Warbler	5
Yellow-rumped Warbler	1

Foster Creek

6/22/2002

brassy minnow	64
common carp	206
fathead minnow	26
green sunfish	86
plains minnow	73
sand shiner	99
white sucker	2

Incidentals

Painted Turtle
Snapping Turtle

6/22/2002 Incidentals

Common Snipe	
Great Blue Heron	
Mallard	
Say's Phoebe	
Upland Sandpiper	
<u>6/22/2002 Survey</u>	
Barn Swallow	2
Cliff Swallow	2
Grasshopper Sparrow	6
Great Blue Heron	1
Killdeer	3
Lark Bunting	5
Lark Sparrow	1
Mourning Dove	1
Red-winged Blackbird	9
Unknown Blackbird	3
Unknown Sparrow	1
Unknown Swallow	2
Western Meadowlark	16

Hay Coulee

8/5/2002

no fish
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Incidentals

Plains Garter Snake
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6/8/2002 Incidentals

American Avocet
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		Tiger Salamander	American Wigeon
		Western Chorus Frog	Eastern Kingbird
			Gadwall
			Horned Lark
			Killdeer
			Red-winged Blackbird
			Savannah Sparrow
			Say's Phoebe
			Vesper Sparrow
			6/8/2002 Survey
			Chestnut-collared Longspur 6
			Gadwall 1
			Horned Lark 2
			Killdeer 2
			Lark Bunting 3
			Mallard 4
			Northern Pintail 2
			Northern Shoveler 2
			Unknown Blackbird 12
			Unknown Duck 10
			Unknown Hawk 1
Little Sage Creek	8/3/2002	Incidentals	6/7/2002 Incidentals
	no fish	Plains Garter Snake	American Goldfinch
			Brewer's Blackbird
			Canada Goose
			Clay-colored Sparrow
			Cliff Swallow
			Horned Lark
			Northern Harrier
			Ring-necked Pheasant
			Savannah Sparrow
			Sharp-tailed Grouse
			Swainson's Hawk
			Vesper Sparrow
			Western Meadowlark

Muddy Creek	<u>7/31/2002</u>		<u>Survey</u>	<u>6/7/2002 Survey</u>	
	lake chub	5		American Crow	2
	longnose dace	61		Brewer's Blackbird	4
	sand shiner	29		Brown-headed Cowbird	6
	white sucker	12		Clay-colored Sparrow	6
				Eastern Kingbird	9
				Gadwall	2
				Horned Lark	4
				Mallard	3
				Mourning Dove	1
				Northern Harrier	1
				Ring-necked Pheasant	5
				Savannah Sparrow	4
				Unknown Swallow	1
				Vesper Sparrow	8
				Western Meadowlark	7
				<u>6/6/2002 Incidentals</u>	
				Brown-headed Cowbird	
				Eastern Kingbird	
				Ferruginous Hawk	
				Great Horned Owl	
				Killdeer	
				Lark Sparrow	
				Long-billed Curlew	
				Mallard	
				Prairie Falcon	
				Spotted Sandpiper	
				Swainson's Hawk	
				Vesper Sparrow	
				Western Kingbird	
				<u>6/6/2002 Survey</u>	
				American White Pelican	11
				Brewer's Blackbird	4
				Cliff Swallow	502
				Eastern Kingbird	1

Franklin's Gull	2
Horned Lark	6
Killdeer	1
Lark Sparrow	2
Mallard	2
Mourning Dove	1
Northern Harrier	1
Northern Rough-winged Swallow	2
Spotted Sandpiper	1
Unknown Gull	2
Vesper Sparrow	2
Western Meadowlark	3

Murray Coulee	<u>8/7/2002</u>		<u>Incidentals</u>		<u>6/9/2002 Incidentals</u>	
	brook stickleback	4	Northern Leopard Frog		Barn Swallow	
	fathead minnow	3	Plains Garter Snake		Savannah Sparrow	
			Survey		Blue-winged Teal	
			Northern Leopard Frog	6	<u>6/9/2002 Survey</u>	
					Chestnut-collared Longspur	1
					Eastern Kingbird	5
					Horned Lark	2
					Marbled Godwit	6
					Northern Pintail	6
Ninemile Coulee	<u>8/4/2002</u>		<u>Survey</u>		Red-winged Blackbird	1
	no fish		none		Vesper Sparrow	11
					Western Meadowlark	1
					Willet	8
					Wilson's Phalarope	7
					<u>6/8/2002 Incidentals</u>	
					Chestnut-collared Longspur	
					Long-billed Curlew	
					Northern Harrier	
					<u>6/8/2002 Survey</u>	
					Brewer's Blackbird	1
					Chestnut-collared Longspur	9

				Horned Lark	11
				Lark Bunting	10
				Long-billed Curlew	1
				Unknown Swallow	5
				Western Meadowlark	5
North Fork Burns Creek	<u>7/25/2002</u> green sunfish	1	<u>Incidentals</u>	<u>6/20/2002 Incidentals</u>	
			Bufo toadlet	Marbled Godwit	
			Gopher Snake	Red-tailed Hawk	
			Plains Garter Snake	Turkey Vulture	
			Racer	<u>6/20/2002 Survey</u>	
			Western Rattlesnake	American Crow	4
			<u>Survey</u>	American Kestrel	2
			Bufo toadlet	Bank Swallow	3
			Northern Leopard Frog	Bobolink	1
				Brown Thrasher	3
				Brown-headed Cowbird	9
				Common Grackle	2
				Common Snipe	6
				Grasshopper Sparrow	1
North Willow Creek	<u>8/29/2002</u> no fish			Horned Lark	1
				Killdeer	1
				Lark Sparrow	2
				Long-billed Curlew	3
				Red-winged Blackbird	1
				Ring-necked Pheasant	3
				Spotted Towhee	3
				Sprague's Pipit	1
				Upland Sandpiper	4
				Western Meadowlark	7
				Yellow Warbler	2
			<u>Incidentals</u>	<u>5/26/2002 Incidentals</u>	
			Great Plains Toad	Orange-crowned Warbler	
			Short-horned Lizard	Rock Dove	
			Western Chorus Frog	Tennessee Warbler	

		Western Rattlesnake			Wilson's Phalarope	
		<u>Survey</u>			Yellow Warbler	
		Racer	1	<u>5/26/2002 Survey</u>		
				Blue-winged Teal		1
				Brewer's Blackbird		7
				Brown-headed Cowbird		1
				Cliff Swallow		5
				Horned Lark		5
				Killdeer		6
				Lark Bunting		7
				Mallard		1
				Northern Harrier		2
				Red-winged Blackbird		5
				Say's Phoebe		1
				Unknown Sparrow		3
				Vesper Sparrow		3
				Western Meadowlark		6
				Wilson's Phalarope		3
Police Creek	<u>7/20/2002</u>		<u>Incidentals</u>	<u>6/19/2002 Incidentals</u>		
	brook stickleback	19	Painted Turtle	Bobolink		
	fathead minnow	8	Plains Garter Snake	Chestnut-collared Longspur		
			<u>Survey</u>	Eastern Kingbird		
			Northern Leopard Frog	<u>6/19/2002 Survey</u>		
				Baird's Sparrow		8
				Barn Swallow		2
				Blue-winged Teal		2
				Bobolink		3
				Brewer's Blackbird		1
				Brown-headed Cowbird		7
				Common Snipe		3
				Killdeer		2
				Mallard		1
				Marbled Godwit		2
				Red-winged Blackbird		5
				Savannah Sparrow		5

				Sprague's Pipit	5
				Upland Sandpiper	1
				Western Meadowlark	2
				Wilson's Phalarope	7
Snow Coulee	7/20/2002		Incidentals	6/18/2002 Incidentals	
	northern pike	29	Painted Turtle	Chestnut-collared Longspur	
				Common Nighthawk	
				Common Snipe	
				6/18/2002 Survey	
				Northern Harrier	5
				American Wigeon	4
				Barn Swallow	14
				Brown-headed Cowbird	1
				Common Nighthawk	1
				Eastern Kingbird	4
				Gadwall	5
				Horned Lark	2
				Killdeer	6
				Lark Bunting	5
				Mallard	5
				Marbled Godwit	4
				Mourning Dove	1
				Northern Pintail	11
				Red-winged Blackbird	2
				Savannah Sparrow	1
				Upland Sandpiper	5
				Western Meadowlark	3
				Willet	6
				Wilson's Phalarope	5
South Sunday Creek	9/4/2002		Incidentals	6/20/2002 Incidentals	
	black bullhead	2	Great Plains Toadlet	Brewer's Sparrow	
	channel catfish	7	Snapping Turtle	Field Sparrow	
	common carp	8	Western Chorus Frog	Killdeer	
	fathead minnow	5	Northern Leopard Frog	6/20/2002 Survey	

flathead chub	53
lake chub	2
plains minnow	96
river carpsucker	1
sand shiner	7
western silvery minnow	3

Woodhouse's Toad  
Woodhouse's Toadlet

Brewer's Blackbird	1
Brewer's Sparrow	3
Eastern Kingbird	1
European Starling	1
Horned Lark	2
Lark Bunting	14
Mourning Dove	6
Unknown Blackbird	2
Unknown Hawk	1
Unknown Sparrow	2
Western Meadowlark	10

Steve's Fork

<u>7/6/2002</u>	
black bullhead	16
brassy minnow	173
common carp	117
fathead minnow	1,736
lake chub	43
plains killifish	5
plains minnow	45
sand shiner	13
yellow perch	1
<u>9/26/2002</u>	
black bullhead	132
brassy minnow	85
common carp	41
fathead minnow	418
lake chub	3
plains minnow	53
yellow perch	22

<u>Incidentals</u>	
Western Chorus Frog	
Woodhouse's Toad	
<u>Survey 1</u>	
Gopher Snake	1
<u>Survey 2</u>	
Northern Leopard Frog	1

<u>5/28/2002 Incidentals</u>	
Canada Goose	
Great Blue Heron	
Mallard	
Say's Phoebe	
Vesper Sparrow	
<u>5/28/2002 Survey</u>	
Brewer's Sparrow	1
Brown-headed Cowbird	6
Cliff Swallow	13
Gadwall	1
Horned Lark	2
Killdeer	3
Lark Bunting	49
Mallard	2
Mourning Dove	2
Red-winged Blackbird	4
Unknown Sparrow	1
Vesper Sparrow	1
Western Meadowlark	9
<u>6/25/2002 Incidentals</u>	
Gadwall	
Mallard	
Rock Dove	



			Vesper Sparrow		
			Western Kingbird		
			<u>6/25/2002 Survey</u>		
			American Kestrel		1
			Brown-headed Cowbird		7
			Cliff Swallow		2
			Eastern Kingbird		2
			Gadwall		1
			Killdeer		3
			Lark Bunting		24
			Mourning Dove		2
			Red-winged Blackbird		1
			Rock Dove		2
			Unknown Duck		1
			Western Meadowlark		9
Thompson Creek	<u>7/11/2002</u>		<u>Incidentals</u>		
	black bullhead	10	Northern Leopard Frog		
	brook stickleback	17	Plains Spadefoot		
	fathead minnow	653	Western Chorus Frog		
	lake chub	7	Woodhouse's Toad		
	plains minnow	14	<u>Survey 1</u>		
	sand shiner	1	Bufo toadlet	4	
	white sucker	1	Northern Leopard Frog	11	
	<u>9/26/2002</u>		Unknown Frog	7	
	black bullhead	2	Woodhouse's Toad	2	
	brook stickleback	24	<u>Survey 2</u>		
	common carp	28	Northern Leopard Frog	14	
	fathead minnow	238			
	lake chub	2			
	largemouth bass	3			
	longnose dace	1			
	plains minnow	279			
	sand shiner	56			
			<u>5/28/2002 Incidentals</u>		
			Chestnut-collared Longspur		
			Common Yellowthroat		
			Grasshopper Sparrow		
			Marbled Godwit		
			McCown's Longspur		
			Northern Harrier		
			Northern Pintail		
			Swainson's Hawk		
			Wood Duck		
			Yellow-headed Blackbird		
			<u>5/28/2002 Survey</u>		
			American Goldfinch		4
			Canada Goose		6
			Grasshopper Sparrow		1
			Greater Sage Grouse		1
			Horned Lark		3
			Killdeer		1
			Lark Bunting		16
			Mallard		5

Mourning Dove	2
Northern Harrier	3
Northern Rough-winged Swallow	2
Red-winged Blackbird	9
Unknown Swallow	1
Vesper Sparrow	2
Western Meadowlark	6
<hr/> 6/25/2002 Incidentals	
Chestnut-collared Longspur	
Mallard	
Sharp-tailed Grouse	
<hr/> 6/25/2002 Survey	
American Wigeon	1
Brown-headed Cowbird	1
Eastern Kingbird	2
Grasshopper Sparrow	1
Horned Lark	8
Killdeer	1
Lark Bunting	18
Mallard	8
Mourning Dove	1
Red-winged Blackbird	2
Unknown Duck	2
Unknown Hawk	1
Unknown Swallow	1
Western Meadowlark	10

Trail Creek

no fish sample

Incidentals

Painted Turtle

6/23/2002 Incidentals

American Green-winged Teal  
 American Kestrel  
 Black-capped Chickadee  
 Blue-winged Teal  
 Brewer's Blackbird  
 Chipping Sparrow  
 Common Nighthawk  
 Golden Eagle

				Mallard	
				Olive-sided Flycatcher	
				Red-tailed Hawk	
				Rock Wren	
				Wilson's Phalarope	
				Yellow-rumped Warbler	
				<u>6/23/2002 Survey</u>	
				American Robin	1
				Brown-headed Cowbird	3
				Bullock's Oriole	1
				Killdeer	8
				Lark Sparrow	2
				Mourning Dove	2
				Northern Flicker	1
				Red-winged Blackbird	9
				Unknown Sparrow	1
				Upland Sandpiper	1
				Western Meadowlark	8
Tule Creek	<u>7/22/2002</u>		<u>Incidentals</u>	<u>6/19/2002 Incidentals</u>	
	northern pike	4	Northern Leopard Frog	Mallard	
			Painted Turtle	<u>6/19/2002 Survey</u>	
			Plains Garter Snake	Barn Swallow	4
			Unknown Turtle	Brewer's Blackbird	3
			<u>Survey</u>	Brown-headed Cowbird	2
			Northern Leopard Frog	Chestnut-collared Longspur	4
			Plains Garter Snake	Horned Lark	3
				Killdeer	3
				Lark Bunting	6
				Loggerhead Shrike	1
				Marbled Godwit	4
				Northern Harrier	2
				Red-winged Blackbird	11
				Upland Sandpiper	4
				Western Meadowlark	3
				Willet	2

				Wilson's Phalarope	8
				Yellow-headed Blackbird	1
West Charlie Creek	<u>7/24/2002</u>	<u>Incidentals</u>		<u>6/18/2002 Incidentals</u>	
	brook stickleback	10	Northern Leopard Frog	American White Pelican	
	fathead minnow	2,212	Painted Turtle	Killdeer	
	Iowa darter	1	Woodhouse's Toad	Marbled Godwit	
	plains minnow	1	<u>Survey</u>	<u>6/18/2002 Survey</u>	
	white sucker	84	Northern Leopard Frog	American Wigeon	2
			Painted Turtle	Barn Swallow	1
	Grand Total	12,656	Unknown Turtle	Belted Kingfisher	1
				Blue-winged Teal	1
			Grand Total	Brewer's Blackbird	1
			363	Brown-headed Cowbird	1
				Common Nighthawk	1
				Common Snipe	3
				Gadwall	1
				Golden Eagle	1
				Lark Bunting	11
				Mallard	1
				Mourning Dove	6
				Northern Shoveler	1
				Red-winged Blackbird	5
				Ring-necked Pheasant	2
				Rock Dove	2
				Sharp-tailed Grouse	1
				Spotted Sandpiper	4
				Unknown Blackbird	1
				Upland Sandpiper	2
				Western Meadowlark	5
				Grand Total	2,761

Table 2. Summary of mammals captured, 2002.

Site	Date Set	Species	Number Captured
Assinboine Creek	7/12/2002	deer mouse	2
	9/27/2002	deer mouse	5
Big Dry Creek	9/3/2002	deer mouse	9
		northern grasshopper mouse	1
Bitter Creek	9/17/2002	deer mouse	7
Blood Creek	9/1/2002	deer mouse	10
Boxelder Creek	7/23/2002	deer mouse	26
		Peromyscus sp.	1
Buggy Creek	7/18/2002	deer mouse	15
		meadow vole	1
		Peromyscus sp.	1
		white-footed mouse	4
Chouteau Coulee	8/6/2002	deer mouse	10
Cottonwood Creek	8/1/2002	deer mouse	22
Crow Creek (1)	7/17/2002	deer mouse	4
	9/28/2002	deer mouse	4
Crow Creek (2)	9/15/2002	deer mouse	8
Currant Creek	8/28/2002	deer mouse	8
Dog Creek	7/11/2002	deer mouse	12
		white-footed mouse	2
	9/29/2002	deer mouse	13
Eagle Creek (1)	7/21/2002	upland sandpiper	1
Eagle Creek (2)	8/2/2002	deer mouse	8
		northern grasshopper mouse	1
East Fork Little Powder	9/16/2002	deer mouse	6
		meadow vole	1
Elk Creek	8/30/2002	deer mouse	26
Flat Creek	8/31/2002	deer mouse	17
		northern grasshopper mouse	1

Table 2. Continued.

Site	Date Set	Species	Number Captured
Fly Creek	9/5/2002	deer mouse	10
		western harvest mouse	1
Fords Creek	9/2/2002	deer mouse	10
		house mouse	1
		western harvest mouse	2
Foster Creek	9/15/2002	deer mouse	3
Hay Coulee	8/5/2002	deer mouse	10
		northern grasshopper mouse	2
Little Sage Creek	8/3/2002	deer mouse	16
		Peromyscus sp.	2
Muddy Creek	7/31/2002	deer mouse	17
Murray Coulee	8/7/2002	leopard frog	1
		Richardson's ground squirrel	1
Ninemile Coulee	8/4/2002	deer mouse	7
North Fork Burns Creek	7/25/2002	deer mouse	4
		white-footed mouse	1
North Willow Creek	8/29/2002	deer mouse	15
Police Creek	7/20/2002	deer mouse	1
		meadow vole	1
Snow Coulee	7/19/2002	deer mouse	5
		meadow vole	1
		white-footed mouse	3
South Sunday Creek	9/4/2002	deer mouse	7
		white-footed mouse	1
Steve's Fork	7/5/2002	deer mouse	2
		horned lark	1
		olive-backed pocket mouse	1
	9/25/2002	deer mouse	3
Thompson Creek	7/10/2002	deer mouse	6
		white-footed mouse	1
	9/26/2002	deer mouse	7
Tule Creek	7/22/2002	deer mouse	4
		meadow vole	1

Table 2. Continued.

Site	Date Set	Species	Number Captured
West Charlie Creek	7/24/2002	deer mouse	9
		white-footed mouse	1
Grand Total			384